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10/629,135	07/29/2003	William T. Devine III	61691	6586

25702 7590 08/10/2006

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EXAMINER	
PAYNE, DAVID C	
ART UNIT	**PAPER NUMBER**
2613	

DATE MAILED: 08/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/629,135	DEVINE ET AL.	
	Examiner	Art Unit	
	David C. Payne	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12-15,17,19 and 20* is/are rejected.

7)☒ Claim(s) *11,16 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Avakian US 4727600 (Avakian).

Avakian 1-4, 19 and 20 disclosed,

> With reference to the drawing wherein like numerals represent like parts throughout the several FIGURES, a communication system designated generally by the numeral 10 employs infrared electromagnetic signals for communicating between a pair of communication stations 12 and 14. Stations 12 and 14 may assume a variety of forms as will be further described below. The stations are separated by a barrier illustrated as a building wall 16 which does not permit the direct transmission of infrared electromagnetic signals between station 12 and 14. Stations 12 and 14 may be suitably described as two compatible communication stations which do not have a common line of sight and which operate by transmitting and/or receiving electromagnetic signals in the infrared range.
>
> An exemplary application of the present invention is in the context of a building security system wherein the barrier to the direct passage of infrared transmissions is a structural wall 16 of the building. Wall 16 may constitute an interior or exterior wall of the structure and in the illustrated embodiment may be viewed as a wall wherein side 18 is exterior to a secured area and side 20 is interior of the secured area. Station 12 may be viewed as a station which communicates via infrared signal transmission with station 14 interiorly of the secured area for selectively permitting and/or preventing access to the secured area in accordance with the information communicated between the stations. The wall 16 defining the secured area prevents direct infrared communication between stations 12 and 14.

In accordance with the invention, an infrared data repeater 22 is employed to provide a communication path between station 12 and the repeater and between the repeater and station 14. Infrared repeater 22 is preferably mounted in a bore 24 formed in a top portion of wall 16. The bore is preferably dimensioned to be approximately one (1") inch in diameter and may be formed by conventional means. The bore extends from the exterior side 18 to the interior side 20 of the secured area. An elongated cylindrical housing 26 is closely received in bore 24 and extends outwardly through sides 18 and 20. A collar 28 interiorly receives the end of housing 26 in a close interfitting relationship which secures the collar to the housing. The collar has a circumferentially extending flange 30 disposed transversely to the housing to seal against wall 16. A semi-flexible tube 32 projects through a central aperture of collar 28 away from side 18 for mounting an infrared transmission relay unit 34. A flange-like base 33 of tube 32 is interiorly retained by collar 28 for securely anchoring the tube 32 to the rigidly mounted housing 26.

Relay unit 34 is enclosed by a shell-like or hemispherical housing 38 which is rigidly connected to the extended end of the semi-flexible tube 32. A semi-spherically-shaped printed circuit board 40 is interiorly mounted in housing 38. Such a semi-spherically shaped circuit board may be formed by conformal circuit board fabrication technology. Alternative standard circuit board fabrication would ordinarily require longer leads for the components for insertion into connectors on small flat circuit boards or ribbon cables. A plurality of photoemitters 42 and photodetectors 44 are mounted to circuit board 40 and positioned thereon to form an array of elements which are positioned at the exterior spherical surface of housing 38.

Photoemitter 42 may be of the type marketed by Stanley Electric Co., Ltd. and described in Stanley data sheets E101, E102 and E104. The intensity of such photoemitters has been increased by the work of Professor Junichi Nishizawa, head of the Electrical Communication Laboratory of Tohoku University. The work of Nishizawa has resulted in an increased brightness in the visible region from 160 mcd in 1979 to 500 mcd in 1982. An increase in intensity has been achieved in the infrared region since 1982. With the improvement in the photoemitters 42 as described above and other equivalent photoemitters, the efficiency of infrared emitters has been recently sufficiently improved

so that the photoemitters may be pulsed by MOSFET drivers as described hereinafter. The foregoing described emitters can generate beams of 15 and 30 degree solid angles. It is only in the last few years that it has been possible to implement a transmission of 1.5 amps or more through such highly efficient photoemitters with a pulse duration of a few micro seconds and in some instances less than one micro second while generating an intense signal. Such intense infrared signals are of utmost importance in the transmission of signals through free space.

Circuit board 40 includes circuitry and mounts various components for forming an infrared receiver and an infrared transmitter as will be further described below. It should be appreciated that the array of infrared elments at the surface of the housing 38 essentially comprise a plurality of infrared photoemitter/photodetector pairs. Alternately, an array of photoemitter/photodetector pairs such as the H-500 LED and PD502 of Stanley Electric Co., Ltd. may be employed.

A collar 46 substantially identical to collar 28 interiorly receives the end of housing 26 projecting through interior side 18. Collar 46 is preferably threaded for interior receptive threading engagement with a complementary threaded surface formed at the peripheral end of housing 26 so that the infrared repeater may essentially be mounted in bore 24 by axially sliding the housing 26 from side 18 until the housing projects beyond side 20 and collar 28 engages side 18 and threading the collar on the end of the housing until collar 46 firmly engages side 20. Collar 46 also retains a semi-flexible tube 48 substantially identical to tube 32 for mounting a second infrared transmission relay unit 50.

Relay unit 50 is enclosed by a hemispherical housing 52 which is substantially identical to housing 38. Housing 52 exteriorly locates a second array of pairs of infrared light photoemitters 54 and photodetectors 56. In one form of the invention, the respective arrays of infrared photodetector elements are substantially identical for relay units 34 and 50. However, the invention is not limited to such a relationship. In one embodiment of the infrared repeater 22, relay unit 34 includes a single photodetector for receiving infrared signals, and relay unit 50 includes a single LED for transmitting infrared signals. In other embodiments one or both of the relay units may be limited to an array of only receiver or transmitter elements. A generally hemispherically configured circuit board

mounts LEDs 54 and photodetectors 56. A second circuit board 60 is also mounted within housing 52.

An electrical cable 62 extends from circuit board 60 of relay unit 50 to circuit board 40 of relay unit 34 interiorly of the enclosure provided by housing 26 and the flexible tubes 32 and 48. Additional cable (not illustrated) may also connect circuit boards 40, 58 and/or 60 with other communication stations (not illustrated) by means of hard wired-type connections. Housing 26 also forms an axially extending receptacle for receiving an aligned pair of rechargeable batteries 64. In this regard, a spring 66 forces the batteries 64 into electrical contact for electrical engagement with the positive terminal 68. A photovoltaic sheet (not illustrated) electrically communicates with the batteries via lead 72 for recharging the batteries. A plug-in power module (not illustrated) may also be employed for supplying electrical power to the repeater 22. Because the illustrated infrared repeater is integrated into a building security system, it is imperative that means be provided so that the repeater is operative in the event of an electrical power failure in the building.

In a preferred form of the communication system provided by the present invention, communication station 12 is a portable hand-held infrared transmitter and receiver which assumes the form of a remote card terminal 90 as illustrated in FIG. 2. Card terminal 90 is preferably dimensioned to measure approximately three (3") inches by five (5") inches by a half (1/2") inch. One side of the terminal is provided with a membrane keyboard 92 and a liquid crystal display (LCD) 94 such as the card terminal marketed by International Micro Industries of Cherry Hill, N.J. A middle layer 93 of card terminal 90 includes a CPU memory (not illustrated), an infrared LED 96 and an infrared photodetector 98. LED 96 and photodetector 98 are disposed close to the edge of the card terminal 90 in order to provide a relatively wide solid angle for infrared transmission and reception. Alternatively, the LED 96 and photodetector 98 may be positioned a distance from the edge of the terminal with a clear plastic material being interposed to embed the infrared elements and provide a transmission path to the edge of the card. A plastic filter or coating may be disposed in the foregoing transmission path to filter out electromagnetic waves in the visible and ultraviolet range to prevent interference with the infrared signals. A similar filter assembly may also be employed with the receiver and transmitter

elements of relays 34 and 50. A third layer 91 of card terminal 90 includes a relatively flat configuration of batteries such as the "Polaroid" P-80 "POLAPULSE" battery or in the alternative, a layer of rechargeable button configured batteries.

For the illustrated security system wherein communication station 14 is positioned within the secured area, a suitable form of station 14 is illustrated in FIG. 4 wherein an infrared transceiver 102 communicates with a computer terminal 104. In order to gain access to the secured area, an individual would employ a card terminal 90 and, by pushing appropriate keys of the membrane keyboard 92, would transmit infrared signals to the receiver elements of first relay unit 34 of repeater 10. The received signal would then be electrically communicated to the transmitter elements of second relay unit 50 for infrared transmission to station 14. Upon receipt of the signal at station 14, automatic means 103, an electrically operated lock for example, could be provided for allowing access to the controlled area if appropriate. If further information were required, communications could be conducted from station 14 to the receiver elements of relay unit 50 which electrically relay the signals to repeat the signals at the transmitter elements of relay unit 34 for infrared transmission to the same card terminal 90 which sent the original message or communication stations 12.

It should be appreciated that infrared data repeater 22 is configured to provide an efficient data communication means in instances where portable infrared transmitters and/or receivers are employed. The distribution of the infrared emitter receiver elements over an extended spherical surface results in a communication window encompassing a relatively large solid angle for receiving and widely dispersing infrared electromagnetic signals. Consequently, precise aiming or aligning of the infrared transmitter and/or receiver is not required. This latter feature may prove advantageous for security systems specifically designed for use by disabled or elderly individuals wherein conventional line of sight alignment of the receiver and transmitter elements may not be easily accomplished. The semiflexible neck structures allow the infrared transmitter and receiver elements to be orientated at a wide variety of selected directional orientations to

afford a large degree of flexibility in the positioning of the infrared communication stations 12 and 14 relative to the repeater. This latter feature is significant in instances where either one or both of the communication stations is portable. Thus, the infrared repeater 22 may provide a pair of infrared communication regions which essentially encompasses the useable spaces of entire separated rooms.

Col./Lines: 4/20-67; 5/1-67; 6/1-40.

3. Claims 1-4, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Takamatsu US 5822099 (Takamatsu).

Takamatsu 1-4, 19 and 20 disclosed,

Referring to FIG. 1, a first transmission/reception unit 10 includes a light emission drive control circuit 12 for causing transmission of a communication signal supplied to an input terminal 11 and a transmission unit 13 supplied with a driving control signal from the light emitting drive control circuit 12. The first transmission/reception unit 10 also includes a reception unit 14 for receiving the communication from outside and a reception processing circuit 15 for reception processing of signals from the reception unit 14. The reception signals from the reception processing circuit 15 are taken out via an output terminal 16. The transmission unit 13 of the transmission/reception unit 10 has light emitting means, such as an infrared emitting diode, which emits light responsive to the signal from the light emitting drive control circuit 12.

The second transmission/reception circuit 20 of FIG. 1 includes a transmission drive control circuit 22 for causing transmission driving control of a communication signal supplied to an input terminal 21 and a transmission unit 23 supplied with a driving control signal from the transmission drive control circuit 22. The second transmission/reception circuit 20 also includes a light receiving

element 27 constituting a light reception unit 24 designed to receive the light, such as infrared light, of spatial light communication from the light emitting element 17 of the first transmission/reception unit 10, and a light signal reception processing circuit 25 for reception processing of the light signal from the light receiving element 27 of the reception unit 27. The reception signal from the light signal reception processing circuit 25 is taken out at an output terminal 26.

Within the light signal reception processing circuit 25 of the second transmission/reception unit 20 of FIG. 1, there is provided a reception light intensity detection circuit 28 for detecting the intensity of light received by the light receiving element 27 of the reception unit 24. The reception light intensity information detected by the reception light intensity detection circuit 28 is sent to the transmission driving control circuit 22 and sent to the transmission unit 23 as the transmission driving signal along with the communication signal from the input terminal 21. The transmission unit 23 transmits signals, such as electrical waves, infrared rays or similar signals to the reception unit 14 of the first transmission/reception unit 10. It is noted that, although communication between the transmission unit 23 of the second transmission/reception unit 20 and the reception unit 14 of the first transmission/reception unit 10 may be by electrical weaves, infrared light rays or in any other form, spatial light communication with light, such as infrared light rays, is most preferred. Of the reception information obtained on signal reception by the reception unit 14 of the first transmission/reception unit 10 and on signal processing by the reception processing circuit 15, the reception light intensity information is sent to the light transmission intensity adjustment circuit 18 within the light emission driving control circuit 15. The light transmission intensity adjustment circuit 18 variably adjusts the light emission intensity of the light emitting element 17 of the transmission unit 13.

In carrying out light communication, the light emission intensity adjustment circuit 18 within the light emission driving control circuit 12 of the first

transmission/reception unit 10 causes the light emission element 17 to emit light with the maximum light emission intensity to start communication. The light transmission intensity adjustment circuit 18 variably adjusts the light emission intensity for achieving the minimum light emission intensity assuring stable communication responsive to the reception light intensity information from the second transmission/reception unit 20 as a counterpart of communication. In this case, the light intensity is weakened from the maximum light emission intensity during communication. Alternatively, the light intensity may be strengthened from the minimum light emission intensity, or the light intensity may be varied from a mid light emission intensity.

If the relative position between the first light transmission/reception unit 10 and the second light transmission/reception unit 20 is fixed, it suffices if the light emission intensity be adjusted at the outset to an optimum value, while it is unnecessary to re-adjust the light emission intensity each time communication is started.

Such adjustment of light emission intensity has the following merits:

If communication is to be had between a transmission/reception unit 31 having the light emission element for transmission and a transmission/reception unit 32a having a light reception element and the light emission intensity of the light emission element of the transmission/reception unit 31 is maximum, there are three transmission/reception units 32a, 32b and 32c, for example, within a light signal reaching range 35. Thus, there is raised a problem of signal interference or obstruction of communication. In addition, the electric power is consumed wastefully. If the light emission intensity of the light emitting element of the transmission/reception unit 31 is adjusted to a necessary minimum value based

on the light reception intensity information from the transmission/reception unit 32a, it may be said that only the transmission/reception unit 32a is present within the light signal reaching range 34, so that there is little risk of the transmission/reception unit obstructing other light communication operations going on in the near-by area, while the power consumption is reduced to a necessary minimum value. This is particularly desirable in the case of a battery-driven type portable reception device in prolonging the battery service life Col./Lines: 3/15-67; 4/1-55.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 5-10, 12-15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Avakian US 4727600 (Avakian) in view Stam et al. US 20020047624 A1 (Stam).

Avakian disclosed the aforementioned invention but did not disclose variable resistors. Stam disclose variable resistors for calibrating the resistance is brightness circuit for and LED, paragraph 56. It would have been obvious to one of ordinary skill in the art at the time of invention to the use the Stam variable resistance in the

Avakian invention given that light transmittance can vary with distance which can cause the receiver to fail.

6. Claims 5-10, 12-15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takamatsu US 5822099 (Takamatsu) in view of Stam et al. US 20020047624 A1 (Stam).

Takamatsu disclosed the aforementioned invention but did not disclose variable resistors. Stam disclose variable resistors for calibrating the resistance is brightness circuit for and LED, paragraph 56. It would have been obvious to one of ordinary skill in the art at the time of invention to the use the Stam variable resistance in the Takamatsu invention given that light transmittance can vary with distance which can cause the receiver to fail.

Allowable Subject Matter

7. Claims 11, 16, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (571) 272-3024. The examiner can normally be reached on M-F, 7:00a - 4:30p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dcp

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